

eye-muscle nerves and ciliary ganglion of the common chick, including the anatomy, histology, and development. The investigation appears to have been conducted with great thoroughness and minuteness of research, but the subject is too technical in its terms and methods to warrant more than general mention in the present connection. The historical side is presented with great fullness, the 'bibliography' alone occupying fourteen pages; the researches of previous authors are summarized and discussed, as regards not only these structures in birds but in the other vertebrate classes. The work was done under the guidance of Professor E. L. Mark, and forms No. 172 of the 'Contributions from the Zoölogical Laboratory of the Museum of Comparative Zoölogy at Harvard College.'—J. A. A.

Whitaker's 'The Birds of Tunisia.'—This sumptuous work,¹ in two royal octavo volumes, with numerous colored plates, is a beautiful example of bookmaking, and the contents are worthy of the setting. The number of species treated is "about 365," of which 150 are permanently resident, 90 are summer migrants, 90 are winter migrants, and 35 are of occasional or accidental occurrence. Under each are given, first, the synonymic and bibliographical references to the species as birds of Tunisia, followed by the description (in smaller type than the rest of the text), and a biographical notice of from one to several pages, as the case may require, with often remarks on the status and relationships of the forms under notice. "Most of the information," says the author, "given regarding the occurrence and life of the several species in Tunisia is first hand, and the result of personal observation during the various journeys I have made in the Regency, but in some cases I have had to rely on the information kindly supplied me by others, foremost among whom I may mention Mr. O. V. Aplin of Bloxham, Oxon, who collected for me in Tunisia between the months of January and June, 1895, and M. Blanc of Tunis." The author's own collecting expeditions in Tunisia extended over a period of about ten years; and he speaks of the country as unrivalled in climate during a large part of the year, and as delightful to visit for sport and natural history investigations. The scenery and climatic conditions are varied, richly wooded mountains and valleys, with fertile plains relieved by lakes and rivers, characterizing the northern districts, while the central region consists of undulating park-like country, broken by lower hills, giving place further south to vast semi-desert prairie-like plains. In the

¹ The | Birds of Tunisia | being a History of the Birds found in | the Regency of Tunis | By | J. I. S. Whitaker | F. Z. S., M. B. O. U., etc. | Vol. I[—II]. | London | R. H. Porter | 7, Princes Street, Cavendish Square, W. | — | 1905. — 2 vols., large 8vo. Vol. I, pp. i—xxxii + 1—294, frontispiece (photogravure), 1 half-tone, 13 pll. col., and map; Vol. II, pp. i—xviii + 1—410, frontispiece (photogravure), 1 half-tone, 2 pll. col., and map. Edition limited to 250 copies.

Introduction, where the country is described at length, Tunisia is considered as divisible into four distinct faunal areas: (1) the Northern, comprising that part of the Regency north of the Atlas Mountains, a well-wooded and well-watered district with an annual rainfall, in different parts, of about 18 to 40 inches; (2) the Central, consisting of several more or less elevated plateaux, less fertile and more arid, with an annual rainfall of only about 8 inches and a much higher temperature; (3) a semi-desert region adjoining to the southward, with very little rain anywhere and some parts practically rainless, a high summer temperature, and a scanty, dwarfed flora, except in the oases; (4) the Desert-region, situated still further to the southward, composed chiefly of "sandy desert or sand-dunes formed of blown sand, intermixed here and there with more solid ground," and the vegetation limited to "a few desert-plants which eke out an existence in spots where there may be a little moisture." A faunal map illustrates the boundaries of these several areas, and also shows the topographic features on a satisfactory scale.

This diversity of physical conditions naturally affects the ranges of the species, some that are abundant in one part of the country being rare or entirely absent in other parts. "Most noticeable also," says the author, "is the variation in the coloration of birds according to their more easterly or westerly habitat in this portion of North-west Africa, the tendency of species in Tunisia being to become pale, whereas in Morocco, on the contrary, the inclination is towards an intensity of colour." As long ago as 1863, Professor Newton (*Ibis*, 1863, p. 189) in referring to "Mr. Wallaston's admirable remarks on the effects of isolation and exposure to a stormy atmosphere upon the insect world, alludes to the effect of the latter conditions as one of the principal causes of the darkening of the plumage of birds.¹"

The classification and nomenclature adopted are more or less in accordance with the out-of-date system employed long ago by Dresser in his 'Birds of Europe.' The author has, however, departed therefrom so far as to use trinomials for local forms, or subspecies, respecting which he says: "It would, indeed, be contrary to the advancement of science not to do so, and no true lover of Nature would wilfully close his eyes to their recognition." The plates are admirably drawn by Grönvold, and well reproduced by Mintern Brothers. Respecting the purpose of the work, the author says it "is merely intended to be a short, though I trust a faithful, history of the birds to be met with in the Regency of Tunis. It may, I hope, be of some use to ornithologists and bird-lovers generally, and in particular to those who may travel in the country of which it treats, which has proved to me for many years so 'happy a hunting ground,'

¹ Professor Newton's extended and definite reference, nearly half a century ago, to the influence of climatic conditions in modifying coloration in birds, with particular reference to certain British species, is of special historic interest.

and afforded such endless enjoyment." The author has evidently prepared this work because he felt that he had something useful to say, and for this reason it will meet with a hearty welcome.— J. A. A.

Ralfe's 'The Birds of the Isle of Man.'¹— The Isle of Man, with a length of about thirty-two miles, and a maximum breadth of about thirteen, affords a sharply circumscribed area of much interest for a monographer of its bird life, and Mr. Ralfe has made a pleasing and instructive book upon this well-chosen subject, which the publisher has brought out in an exceedingly attractive form. The geographical position of the Island — only sixteen miles from the nearest point of the English coast — forbids the expectation of much that is novel in its bird life. The number of species recorded is 183, of which almost exactly one half nest on the island, while 75 are permanently resident.

The author writes from a life-long residence on the island and intimate familiarity with every portion of it; and in treating of its avifauna he states that he has endeavored to emphasize every bird that is "peculiar to it, or characteristic of it, *as Manx*; and to such species as have special interest (from their general rarity as British or otherwise) particular attention has been directed, and the account of their haunts and habits in Man made as complete as possible." An introduction of forty pages gives a detailed description of its topographic features, with pertinent notes on the fauna and flora; 'a history of Manx ornithology'; 'Migration in Man'; 'Manx bird names'; and a list in tabular form of all the species of birds known to have occurred on the island within the last century, with indications of their manner of occurrence, as to whether resident, migratory, or casual visitors. Two excellent large-scale maps show (1) the relation of the Isle of Man to the surrounding countries, and (2) the island itself, with contour lines and colors denoting the topographic features. The half-hundred full-page photographic plates further illustrate characteristic scenic features and the nesting places and eggs of many species of birds.

A detailed biographical account of the species as Manx birds occupies nearly three hundred pages, and contains, besides the exposition of present conditions, much valuable historic matter. Indeed, such a book as becomes in itself a historic landmark, to which future generations will refer as a standard for the comparison of later conditions with those here so faithfully chronicled. The history of the Manx Shearwater, as a bird of the Isle of Man, is traced from the time of Willughby and Ray (middle of the 17th century) to its extinction there early in the last century, apparently through the wholesale destruction of its eggs and young. This admirable monograph properly concludes with a bibliography, a transcript of the various game acts that relate to Manx birds, and an index.— J. A. A.

¹ The Birds of the Isle of Man | By P. G. Ralfe | Member of the British Ornithologists Union | Edinburgh. David Douglas. 1905.— 8vo, pp. i-iv, 1-321, 2 maps, illustrated title-page, and 50 half-tone plates. 18 s. net.